Serial No.: 09/297,701
Group Art Unit No.: 1655

Version with Markings to Show Changes Made

In the Claims:

1. (Twice Amended) A method of identifying genes essential to growth of a single celled organism comprising:

(a) preparing a genomic library of the single celled organism;

(b) providing a plurality of identical grids, each grid comprising a surface on which is immobilized at predefined regions on said surface a plurality of defined materials derived from the genomic library;

(c) mutagenizing the single celled organism by transfection with *(i)* a randomly integrated transposon or [*(ii)*] a similar insertional or transposable element of known sequence or *(ii)*[*(iii)*] with a constructed suicide vector;

(d) growing a test culture comprising the mutagenized single celled organisms and a control culture comprising non-mutagenized single celled organisms under a set of defined conditions;

(e) harvesting surviving cells from the cultures;

(f) extracting and isolating DNA from harvested cells of the test culture;

(g) extracting and isolating RNA or DNA from harvested cells of the control culture;

(h) generating labeled polynucleotide probes from the isolated DNA of the test culture using an oligonucleotide primer directed against *(i)* the randomly integrated transposon or similar insertional or transposable element of known sequence or *(ii)* the constructed suicide vector;

(i) generating labeled polynucleotide probes from the isolated RNA or DNA of the control culture;

(j) hybridizing the labeled probes generated from the isolated DNA of the test culture to a first identical grid to produce a test hybridization pattern;

(k) hybridizing the labeled probes generated from the isolated RNA or DNA of the control culture to a second identical grid to produce a control hybridization pattern;

(l) comparing the hybridization patterns to identify genes essential for growth in the single celled organism; and

(m) confirming that said identified gene is essential for growth of the single celled organism.

12. (Twice Amended) A method of identifying genes essential to growth of a single celled organism by identifying conditionally lethal mutant genes, which comprises:

(a) preparing a genomic library of the single celled organism: (*i*) in an integration vector; or (*ii*) in an expression vector;

(b) providing a grid comprising a surface on which is immobilized at predefined regions on said surface a plurality of defined materials derived from the genomic library;

(c) mutagenizing the single celled organism[:] by transfection with *(i)* a randomly integrated transposon or [*(ii)*] a similar insertional or transposable element of known sequence or *(ii)*[*(iii)*] with a constructed suicide vector;

(d) growing the mutagenized single celled organisms under permissive and non-permissive conditions to identify mutagenized single celled organisms containing conditionally lethal mutant genes;

(e) transforming the single celled organism containing said conditionally lethal mutant genes with the genomic library of step (a);

(f) growing the transformed cells under the same non-permissive conditions as step (d) to identify transformed cells in which conditionally lethal mutant genes have been complemented;

(g) harvesting surviving cells;

(h) extracting and isolating DNA from the harvested cells;

(i) generating labeled polynucleotide probes from the isolated DNA using an oligonucleotide primer directed against *(i)* the randomly integrated transposon or similar insertional or transposable element of known sequence or *(ii)* the constructed suicide vector;

(j) hybridizing the labeled probes generated from the isolated DNA to a grid, whereby such probes that hybridize to the grid identify genes essential for growth of the single celled organism.